U.S. ENVIRONMENTAL PROTECTION AGENCY

TECHNICAL ENFORCEMENT SUPPORT AT HAZARDOUS WASTE SITES

CONTRACT NO. 68-W9-0007
TES X

Metcalf & Eddy, Inc.

M&E

ENVIRONMENTAL PROTECTION AGENCY

TECHNICAL ENFORCEMENT SUPPORT
AT
HAZARDOUS WASTE SITES

TES X

CONTRACT NO 68-W9-0007
WORK ASSIGNMENT # C07002
EPA SS/ID NO. 7PL4

REVIEW OF WOODWARD-CLYDE CONSULTANTS MARCH 1993 QUARTERLY GROUNDWATER MONITORING REPORT

ORTHO-CHEVRON CHEMICAL FACILITY

MARYLAND HEIGHTS, MISSOURI

U.S.EPA REGION VII

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Work Assignment Manager (WAM) requested the Technical Enforcement Support (TES) X Contractor to review the Woodward-Clyde Consultants (WCC) March 1993 Quarterly Groundwater Monitoring Report for the Ortho-Chevron Chemical facility in Maryland Heights, Missouri. This review was performed as part of the tasks assigned under the TES X Contract Number 68-W9-0007, Work Assignment C07002.

2.0 REVIEW OF WCC MARCH 1993 QUARTERLY GROUNDWATER MONITORING REPORT

The following are specific comments related to the review of the WCC Annual Groundwater Monitoring Report.

- WCC is now including a Data Assessment Report (Appendix A of their report) to review the quality of the laboratory data. While this is helpful, the actual laboratory data would be preferable so that an independent Quality Assurance/Quality Control (QA/QC) review of the data could be performed.

- The report mentions that acetone was found in the field blank (Sections 2.1.3, 4.2.3, and Appendix A) and in the laboratory method blank (Section 4.2.3 and Appendix A). However, it should be noted that the acetone concentrations reported for the samples from wells OWC-24, OWC-25, OWC-27, and OWC-29 would be considered as not being detected according to the Blank Rule. The Blank Rule states that a compound should be considered as not detected if it is found in the sample at a concentration of less than five times the concentration found in the blank, or at less than 10 times the concentration found in the blank for the common laboratory contaminants methylene chloride, acetone, 2-butanone (methyl ethyl ketone), toluene, or phthalates. This rule applies to all blanks related to the sample.

- Section 4.2.3 (page 4-2) mentions the presence of the TCE and 1,2-DCE in the sample from well OWC-29, but fails to mention that the TCE concentration is above the 5.0 $\mu g/\ell$ MCL. It is assumed that the 1,2-Dichloroethene (1,2-DCE) concentration listed for OWC-29 is for total (cis- plus trans- isomers) 1,2-DCE since total 1,2-DCE is listed on the Target Compounds List for volatile organic compounds. However, as many laboratories analyze for the individual isomers, it would be helpful to clarify this. If the concentration reported for well OWC-29 were for only cis-1,2-DCE, then the 29 $\mu g/\ell$ is just under half of the 70 $\mu g/\ell$ MCL.

- The third paragraph of Section 5.0 (page 5-1) refers to the concentration of lindane in well OWC-27 as declining "over time". It should be noted that the timeframe over which the lindane concentration is declining is December 1991 to present. From March 1989 to September 1991, the lindane concentration was increasing. On the graphic plots referred to (Figure 2 and 2A), it is the increasing to September 1991 trend that is readily apparent.

- o As noted in previous reviews, the WCC data summary table does not mention that all TCL VOCs were analyzed, and the reference to the analysis of TCL VOCs in Section 2.1.2 could be interpreted to read that the U.S. EPA method was followed rather than all of the compounds on the list were analyzed. It would be clearer to the unfamiliar reader if the TCL list were included in the report, and if the table stated that all TCL compounds were analyzed; only those compounds that were detected in a least one sample are provided on the summary table.

- o On Figure 1, the 510 ft groundwater elevation contour line extends to the southwest corner of the site. As there are no control points to the west on which to base the contour line, WCC should explain their rationale for the placement of this line.

3.0 DISCUSSION OF ANALYTICAL DATA

In order to facilitate a comparison of the data presented in the WCC Groundwater Monitoring Reports and the data from the U.S EPA data for split samples, the TES X Contractor prepared summary tables for each well showing minimum and maximum concentrations of contaminants of concern. These tables, located in Appendix A, are based on available data for the site from 1981 to present. Data sources included in the WCC Site Characterization Report (February 1988), various Annual (or Quarterly) Groundwater Monitoring Reports, the April 1991 WCC Report on the Fate and Transport of Lindane, and from the Environmental Services Assistance Team (ESAT) reports for split samples collected for the U.S. EPA. These data represent Ortho-Chevron information that was readily available to the TES X Contractor and may not be complete. These tables are continually revised as more data become available.

The following is a brief summary of the data for each well.

Well OWC-24 — No pesticides were detected in the sample from March 1993. Previously alpha-BHC had been detected at a range of 0.056 to 0.08 from 1990 to 1992, and beta-BHC had been detected at a maximum of 0.073 $\mu g/\ell$ in this shallow downgradient well located off site. No other contaminants were detected other than the common laboratory contaminant acetone (16 $\mu g/\ell$). Acetone should be listed as not detected according to the 'Blank Rule'.

Well OWC-25 — No contaminants were detected in this deep well located off site and far downgradient in 1990, 1991, 1992, or in March 1993. Historically, 0.53 $\mu g/\ell$ of lindane was detected in this well in 1987, and 0.15 $\mu g/\ell$ was detected in 1989. In 1989, 9 $\mu g/\ell$ of total arsenic was detected. The common laboratory contaminant acetone is reported at 12 $\mu g/\ell$, but should be not detected according to the 'Blank Rule'.

Well OWC-26 — No contaminants were detected in this shallow downgradient well located off site in 1990, 1991, 1992, or in March 1993. In 1989, total arsenic was detected at 10 $\mu g/\ell$ and dissolved

arsenic was detected at 16 µg/ℓ in a duplicate sample. The original sample analyses did not detect arsenic.

Well OWC-27

No pesticides or herbicides were detected in the March 1993 sample. From 1989 to 1992 lindane concentrations ranged from not detected at 0.05 µg/ℓ to 0.23 µg/ℓ in this offsite, deep downgradient well. In 1990 and 1991, alpha-BHC was detected at a maximum of 0.12 µg/ℓ, and delta-BHC was detected at a maximum of 0.064 µg/ℓ in 1991. None of the BHC-isomers were detected in 1992.

No volatile organic compounds other than acetone (19 µg/ℓ) were detected in the March 1993 sample. According to the 'Blank Rule', this should be not detected. Previously, 1,2-dichloroethene was detected in one sample from 1991 at 9.8 µg/ℓ, but was not detected at limits of 5 µg/ℓ in 1992. TCE was detected at 10 µg/ℓ in 1991 and at 19 µg/ℓ in 1992. These TCE concentrations were above the 5 µg/ℓ MCL. Volatile organic compounds other than xylene were not analyzed prior to 1991.

Total arsenic was detected at 48 µg/ℓ in the March 1993 sample; this is just below the 50 µg/ℓ MCL, and is similar to the maximum 55 µg/ℓ measured in 1992. In 1992, total arsenic was detected at a range of 6.6 to 55 µg/ℓ; dissolved arsenic was not detected.

Well OWC-28

This deep downgradient well is located off site and is screened in the limestone bedrock. In the March 1993 sample, lindane was detected at 3.2 µg/ℓ in the sample and at 2.9 µg/ℓ in the duplicate. Alpha-BHC was detected at 1.6 µg/ℓ (1.5 µg/ℓ in the duplicate), and delta-BHC was detected at 0.4 µg/ℓ (0.38 µg/ℓ in the duplicate). These concentrations are within the ranges typical for this well. From 1989 to 1992, lindane was detected at a range of 3.0 to 4.2 µg/ℓ. From 1990 to 1992, alpha-BHC was detected at a range of 1.5 to 2.1 µg/ℓ, and delta-BHC was detected at a range of 0.14 to 0.53 µg/ℓ. At the lower detection levels used for the June 1992 U.S. EPA split sample, the pesticides 4,4'-DDD (0.032 µg/ℓ); 4,4'-DDT (0.04 µg/ℓ), and dieldrin (0.05 µg/ℓ) were also detected.

No volatile organic compounds were detected in the WCC March 1993 sample. Previously, xylene has been detected at a range of 4 (1992 EPA) to 17 µg/ℓ (1989 WCC), and carbon disulfide was detected at 6.8 µg/ℓ in 1992. At the lower detection limits for the June 1992 EPA split sample, chloroform (1 µg/ℓ), toluene (2 µg/ℓ), and chlorobenzene (3 µg/ℓ) were also detected.

Total and dissolved arsenic were not detected in 1991, 1992, or March 1993. Previously, total and dissolved arsenic were detected in 1990 at maximums of 8.6 and 8.8 µg/ℓ, respective-

ly. In 1989, total arsenic was detected at 3.5 µg/ℓ in one sample.

Well OWC-29

This downgradient offsite well, screened in the deep limestone, was drilled and initially sampled in August 1992. The March 1993 WCC data is similar to the concentrations detected in August, September, and December 1992.

Lindane was detected at 0.6 µg/ℓ, which is above the 0.2 µg/ℓ MCL, and alpha-BHC was detected at 0.27 µg/ℓ. No other pesticides were detected. In 1992, lindane was detected at a range of 0.56 to 0.73 µg/ℓ, and alpha-BHC was detected at a range of 0.23 to an estimated 0.38 µg/ℓ.

Trichloroethene (TCE) was detected at 5.1 µg/ℓ, and 1,2-dichloroethene (1,2-DCE) was detected at 29 µg/ℓ. The common laboratory contaminant acetone was also detected at 14 µg/ℓ in the March 1993 sample. However, acetone should be noted as not detected according to the 'Blank Rule'. In 1992, TCE was detected at a range of 5.2 to 6.4 µg/ℓ; and 1,2-DCE was detected at a range of 26 to 34 µg/ℓ. At the lower detection limits used for the August and December U.S. EPA split samples, tetrachloroethene was detected at 3 µg/ℓ and 2.5 µg/ℓ, respectively. 1,1-dichloroethane was detected at 1 µg/ℓ in the August 1992 EPA sample. The TCE concentration exceeds the 5 µg/ℓ MCL. Neither total nor dissolved arsenic have been detected in 1992 or March 1993.

4.0 CONCLUSIONS

The pesticide, herbicide, volatile organic compound, and arsenic concentrations detected in the March 1993 groundwater samples are similar to those detected previously. The source and extent of the volatiles contamination (particularly the TCE) should be determined in future work at this site. It should be noted that TCE is more dense than water, and has a tendency to sink to the bottom of the water column. Therefore, it is possible that the TCE contamination exists in the groundwater below the intervals presently being monitored.

APPENDIX A

Historical Groundwater Data from the Ortho-Chevron Facility

EXPLANATIONS FOR HISTORICAL GROUNDWATER TABLES

Minimum/Maximum concentrations are shown when there is more than one sampling event per year. For compounds not detected, only the minimum detection limits are given.

Individual sampling events (e.g., Jun-92) represent U.S. EPA split samples.

MCL = Maximum Contaminant Level; [Proposed MCL].
* MCL of 170 µg/ℓ for total 1,2-Dichloroethene equals the MCL of 70 µg/ℓ for Cis- plus the MCL of 100 µg/ℓ for trans-.

Shading indicates that at least one concentration detected during the year shown meets or exceeds the present MCL for that compound.

Blank spaces indicate that no specific information is available to TES X to indicate whether a sample was not sampled (NS) for a parameter (e.g., herbicides) or not analyzed (NA) for a compound (e.g., chlordane).

{Duplicate Sample Result} Not shown where the compound was not detected at the same detection limits as the sample.

B = Compound was detected in the blank as well, as in the sample indicated. According to the Blank Rule, a compound in the analyzed sample should be considered as <u>not detected</u> if it was detected at <5 times the concentration in the blank, or <10 times the concentration in the blank for common laboratory contaminants methylene chloride, acetone, 2-butanone, toluene, and phthalates.

I = Data invalidated by the laboratory or during ESAT review.

J = Concentration reported but not valid by approved QC procedures (estimated concentration).

K = Compound not detected at CLP required detection limits for U.S. EPA data. (same as "U" for U.S. EPA data prior to December 1992.)

U = Not detected at detection limit given.

WCC data table, beginning with selected wells in December 1990, report that all TCL volatile organic compounds (VOCs) were analyzed but were omitted from their data tables if not detected. Therefore, the TCL VOCs for WCC analyses are frequently indicated as "U" with no detection limit, as none was provided. All TCL VOCs from September 1992 onward are also assumed to be not detected if not reported, although the WCC report does not make it clear that <u>all</u> TCL VOCs were indeed analyzed.

Other parameters may be shown as "U" when all compounds were not detected at their various respective detection limits (e.g., semi-volatiles).

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-24

Analyte (ug/L)	MCL	WCC 1987	WCC 1988	WCC 1989	WCC 1990	WCC 1991	WCC 1992	WCC 1993
Herbicides								
2,4,5-T		1U	1U	U	.2U	.2U	.2U	.2U
2,4-D	70	1U	1U	U	1.2U	1.2U	1.2U	1.2U
2,4,5-TP (Silvex)	50				.17U	.17U	.17U	.17U
Pesticides								
alpha-BHC					0.056	.060/0.064	0.062/0.08	.05U
beta-BHC					.05U	.05U/0.068	.05U/0.073	.05U
delta-BHC					.05U	.05U	.05U	.05U
gamma-BHC (Lindane)	0.2	.1U	.1U	U	.05U	.05U	.05U	.05U
4,4'-DDD		.1U	.1U	U	.1U	.1U	.1U	.1U
4,4'-DDE		.1U	.1U	U	.1U	.1U	.1U	.1U
4,4'-DDT		.1U	.1U	U	.1U	.1U	.1U	.1U
Aldrin		.1U	.1U	U	.05U	.05U	.05U	.05U
Dieldrin		.1U	.1U/.63	U	.1U	.1U	.1U	.1U
Endrin	2						NA	NA
Chlordane	2						NA	NA
Heptachlor	0.4						NA	NA
Methoxychlor	40		.5U	U			NA	NA
Toxaphene	3		5U	U			NA	NA
Volatile Organics								
Acetone						10U/13	10/23	16 B
Carbon Disulfide						U	5U	U
1,2-Dichloroethene	170*					U	5U	5U
1,1,1-Trichloroethane	200					U	5U	U
1,1,2-Trichloroethane	[5]					5U	5U	U
1,2-Dichloroethane	5					U	5U	U
2-Butanone						U	10U	U
Trichloroethene	5					5U	5U	5U
Benzene	5					5U	5U	U
Chlorobenzene	100					5U	5U	U
Ethylbenzene	700					5U	5U	U
Xylene	10000	1U	1U	U	5U	5U	5U	U
Metals								
Total Arsenic	50				5U	5U	5U	5U
Dissolved Arsenic		10U	10U	U	5U	5U	5U	5U

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-25

Analyte (ug/L)	MCL	WCC 1987	WCC 1988	WCC 1989	WCC 1990	WCC 1991	WCC 1992	WCC 1993
Herbicides								
2,4,5-T		1U	1U		.2U	.2U	.2U	.2U
2,4-D	70	1U	1U		1.2U	1.2U	1.2U	1.2U
2,4,5-TP (Silvex)	50				.17U	.17U	.17U	.17U
Pesticides								
alpha-BHC						.05U	.05U	.05U
beta-BHC						.05U	.05U	.05U
delta-BHC						.05U	.05U	.05U
gamma-BHC (Lindane)	0.2	.1U/.53	.1U	0.15	.05U	.05U	.05U	.05U
4,4'-DDD		.1U	.1U		.1U	.1U	.1U	.1U
4,4'-DDE		.1U	.1U		.1U	.1U	.1U	.1U
4,4'-DDT					.1U	.1U	.1U	.1U
Aldrin		.1U	.1U		.05U	.05U	.05U	.05U
Dieldrin		.1U	.1U		.1U	.1U	.1U	.1U
Endrin	2				.1U	NA	NA	NA
Chlordane	2				.5U	NA	NA	NA
Heptachlor	0.4				.05U	NA	NA	NA
Methoxychlor	40				1U	NA	NA	NA
Toxaphene	3				1U	NA	NA	NA
Volatile Organics								
Acetone						10U	10U	12 B
Carbon Disulfide						U	5U	U
1,2-Dichloroethene	170*					5U	5U	5U
1,2-Dichloroethane	5					5U	5U	U
1,1,1-Trichloroethane	200					U	U	U
1,1,2-Trichloroethane	[5]					5U	5U	U
Trichloroethene	5					5U	5U	5U
Benzene	5					U	5U	U
Chlorobenzene	100					5U	5U	U
Ethylbenzene	700					U	5U	U
Xylene	10000	1U	1U		5U	5U	5U	U
Metals								
Total Arsenic	50			9	5U	5U	5U	5U
Dissolved Arsenic		10U	10U		5U	5U	5U	5U

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-26

Analyte (ug/L)	MCL	WCC 1989	WCC 1990	WCC 1991	WCC 1992	WCC 1993
Herbicides						
2,4,5-T		10U	.2U	.2U	.2U	.2U
2,4-D	70	20U	1.2U	1.2U	1.2U	1.2U
2,4,5-TP (Silvex)	50	NA	.17U	.17U	.17U	.17U
Pesticides						
alpha-BHC		NA	.05U	.05U	.05U	.05U
beta-BHC		NA	.05U	.05U	.05U	.05U
delta-BHC		NA	.05U	.05U	.05U	.05U
gamma-BHC (Lindane)	0.2	.05U	.05U	.05U	.05U	.05U
4,4'-DDD		.1U	.1U	.1U	.1U	.1U
4,4'-DDE		.1U	.1U	.1U	.1U	.1U
4,4'-DDT		.1U	.1U	.1U	.1U	.1U
Aldrin		.05U	.05U	.05U	.05U	.05U
Dieldrin		.1U	.1U	.1U	.1U	.1U
Endrin	2	.1U			NA	NA
Chlordane	2				NA	NA
Heptachlor	0.4	.05U			NA	NA
Methoxychlor	40	.5U			NA	NA
Toxaphene	3	1U			NA	NA
Volatile Organics						
Acetone				10U	10U	10U
Carbon Disulfide				U	5U	U
1,2-Dichloroethene	170*			U	5U	5U
1,1,1-Trichloroethane	200			U	5U	U
1,1,2-Trichloroethane	[5]			5U	5U	U
1,2-Dichloroethane	5			U	5U	U
2-Butanone (MEK)				U	10U	U
Trichloroethene	5			5U	5U	5U
Benzene	5			U	5U	U
Chlorobenzene	100			5U	5U	U
Ethylbenzene	700			U	5U	U
Xylene	10000	5U	5U	5U	5U	U
Metals						
Total Arsenic	50	U, {10}	5U	5U	5U	5U
Dissolved Arsenic		U,{16}	5U	5U	5U	5U

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-27

Analyte (ug/L)	MCL	WCC 1989	WCC 1990	WCC 1991	WCC 1992	EPA Dec-92	WCC 1993
Herbicides							
2,4,5-T		10U	.2U	.2U	.2U	NS	.2U
2,4-D	70	20U	.5U	1.2U	1.2U	NS	1.2U
2,4,5-TP (Silvex)	50	10U	.17U	.17U	.17U	NS	.17U
Pesticides							
alpha-BHC		NA	0.12	.066/0.12	.05U	NS	.05U
beta-BHC		NA	.05U	.05U	.05U	NS	.05U
delta-BHC		NA	.05U	.05U/0.064	.05U	NS	.05U
gamma-BHC (Lindane)	0.2	.09/.11,{.05U}	0.14/0.22 (0.15)	0.12/0.23	.05U/0.066	NS	.05U
4,4'-DDD		.1U	.1U	.1U	.1U	NS	.1U
4,4'-DDE		.1U	.1U	.1U	.1U	NS	.1U
4,4'-DDT		.1U	.1U	.1U	.1U	NS	.1U
Aldrin		.05U	.05U	.05U	.05U	NS	.05U
Dieldrin		.1U	.1U	.1U	.1U	NS	.1U
Endrin	2	.1U	.1U	.1U	.1U	NS	.1U
Chlordane	2	.05U	.05U	.05U	.05U	NS	.5U
Heptachlor	0.4	.05U	.05U	.05U	.05U	NS	.05U
Methoxychlor	40	.5U	.5U	.5U	.5U	NS	.5U
Toxaphene	3	1U	1U	5U	5U	NS	5U
Volatile Organics							
Acetone				5U	5U	I	19 B
Carbon Disulfide				U	5U	1K	U
1,2-Dichloroethene	170*			U/9.8	5U	2.1	5U
1,1,2-Trichloroethane	[5]			5U	5U	1K	U
1,2-Dichloroethane	5			U	5U	1K	U
Trichloroethene	5			5U/10	5U/19	5.9	5U
Benzene	5			U	5U	1K	U
Chlorobenzene	100			5U	5U	1K	U
Ethylbenzene	700			U	5U	1K	U
Xylene	10000	5U	5U	5U	5U	1K	U
Metals							
Total Arsenic	50	3U	5U	5U	6.6/55	NS	48
Dissolved Arsenic		3U	5U	5U	5U	NS	5U

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-28 (Page 1 of 2)

Analyte (ug/L)	MCL	WCC 1989	WCC 1990	EPA Jun-90	WCC 1991	EPA Jun-91
Herbicides						
2,4,5-T		10U	.2U	.2U	.2U	3.9U
2,4-D	70	20U	.5U	1U	1.2U	15U
2,4,5-TP (Silvex)	50	10U	.17U	.2U	.17U	1.1U
Pesticides						
alpha-BHC		NA	1.8	1.6U	1.8/1.9,{1.5/1.8}	1.8J
beta-BHC		NA	.2U	.6U	.2U	.5U
delta-BHC		NA	0.36	0.14	.38/.53,{.34/.50}	.5U
gamma-BHC (Lindane)	0.2	3.7/4.1,{3.4/3.9}	3.5/3.9	3.2	3.2/4.1,{3.1/3.5}	3.3J
4,4'-DDD		.4U	.4U	.12U	.4U	1U
4,4'-DDE		.4U	.4U	.12U	.4U	1U
4,4'-DDT		.4U	.4U	.12U	.4U	1U
Aldrin		.2U	.05U	.5U	.2U	.5U
Dieldrin		.4U	.4U	0.12	.4U	1U
Endrin	2	.4U		.12U	.4U	1U
Endosulfan I						.5U
Endrin Ketone						
Chlordane	2	2U	.2U	.5U	.2U	NA
Heptachlor	0.4	.2U			.2U	.5U
Methoxychlor	40	2U	2U	.6U	2U	
Toxaphene	3	4U	4U		20U	10U
Volatile Organics						
Vinyl Chloride	2				U	10U
Acetone				10U	5.1 {10U}	10U
Carbon Disulfide					U	5U
1,1-Dichloroethene	7				U	5U
1,2-Dichloroethene	170*				5U	5U
Chloroform					U	5U
1,2-Dichloroethane	5				5U	5U
Trichloroethene	5			5U	5U	5U
1,1,2-Trichloroethane	[5]			5U	5U	5U
Benzene	5				U	5U
Tetrachloroethene	5				U	5U
Toluene	1000				U	5U
Chlorobenzene	100			5U	5U	5U
Ethylbenzene	700				U	5U
Xylene	10000	17,{8.7/17}	5U	5U	5.1/8.4,{5.0/9.0}	5U
Semivolatiles						
None Detected		NS	NS	NS	NS	NS
Metals						
Total Arsenic	50	35,{3U}	5U/8.6	10U	5U	10U
Dissolved Arsenic		3U	5U/8.8	10U	5U	10U

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-28 (Page 2 of 2)

Analyte (ug/L)	MCL	WCC 1992	EPA Jun-92	WCC 1993
Herbicides				
2,4,5-T		.2U	.2U	.2U
2,4-D	70	1.2U/1.5,(1.2U)	.5U	1.2U
2,4,5-TP (Silvex)	50	.17U	.15U	.17U
Pesticides				
alpha-BHC		1.8/2.1,(1.6/2)	1.9	1.6,(1.5)
beta-BHC		.2U	.11U	.2U
delta-BHC		.37/.47,(.33/.45)	0.43	.4,(.38)
gamma-BHC (Lindane)	0.2	3.4/4,(3.0/4.2)	3.5	3.2,(2.9)
4,4'-DDD		.4U	0.032	.4U
4,4'-DDE		.25U,(.4U)	.006U	.4U
4,4'-DDT		.4U	0.04	.4U
Aldrin		.2U	.004U	.2U
Dieldrin		.4U	0.05	.4U
Endrin	2	.4U	.02U	.4U
Endosulfan I			.009U	
Endrin Ketone			.038U	
Chlordane	2	.25U	.02U	2U
Heptachlor	0.4	.2U	.009U	.2U
Methoxychlor	40	2U	.01U	2U
Toxaphene	3	20U	.5U	20U
Volatile Organics				
Vinyl Chloride	2	U	3U	U
Acetone		10U	2U	10U
Carbon Disulfide		5U/6.8, (5U)	1U	U
1,1-Dichloroethene	7	U	1U	U
1,2-Dichloroethene	170*	5U	1U	5U
Chloroform		U	1	U
1,2-Dichloroethane	5	5U	1U	U
Trichloroethene	5	5U	1U	5U
1,1,2-Trichloroethane	[5]	5U	1U	U
Benzene	5	5U	1U	U
Tetrachloroethene	5	U	1U	U
Toluene	1000	U	2	U
Chlorobenzene	100	5U	3	U
Ethylbenzene	700	5U	1U	U
Xylene	10000	5U	4	U
Semivolatiles				
None Detected		NS	U	NS
Metals				
Total Arsenic	50	5U	50U	5U
Dissolved Arsenic		5U	50U	5U

Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-29

Analyte (ug/L)	MCL	WCC 1992	EPA Aug-92	EPA Dec-92	WCC 1993	EPA Jun-93
Herbicides						
2,4,5-T		.2U	I	.2U	.2U	
2,4-D	70	1.2U	I	.2U	1.2U	
2,4,5-TP (Silvex)	50	.17U	I	.2U	.17U	
Pesticides						
alpha-BHC		0.25/0.26	0.23	0.38J	0.27	
beta-BHC		.05U	0.005U	.05K	.05U	
delta-BHC		.05U	0.008U	.05K	.05U	
gamma-BHC (Lindane)	0.2	0.56/0.7	0.73	0.68	0.6	
4,4'-DDD		.1U	0.06U	.1K	.1U	
4,4'-DDE		.1U	0.006U	.1K	.1U	
4,4'-DDT		.1U	0.01U	.1K	.1U	
Aldrin		.05U	0.004U	.05K	.05U	
Dieldrin		.1U	0.006U	.1K	.1U	
Endrin	2	.1U	0.02U	.1K	.1U	
Endosulfan I			0.009U	.05K		
Endrin Ketone			0.005U	.1K		
Chlordane	2	.5U	0.02U	.05K	.5U	
Heptachlor	0.4	.05U	0.009U	.05K	.05U	
Methoxychlor	40	.5U	0.01U	.5K	.5U	
Toxaphene	3	5U	0.50U	5K	5U	
Volatile Organics						
Vinyl Chloride	2	U	3U	1K	U	
Acetone		10U	20U	I	14 B	
Carbon Disulfide		5U	1U	1K	U	
1,1-Dichloroethene	7	U	1U	1K	U	
1,1-Dichloroethane		U	1	1K	U	
1,2-Dichloroethene	170*	31/34	1U	26	29	
Chloroform		U	1U	1K	U	
1,2-Dichloroethane	5	5U	1U	1K	U	
Trichloroethene	5	5.2/6.4	6	5.2	5.1	
1,1,2-Trichloroethane	[5]	5U	1U	1K	U	
Benzene	5	5U	1U	1K	U	
Tetrachloroethene	5	U	3	2.5	U	
Toluene	1000	U	1U	1K	U	
Chlorobenzene	100	5U	1U	1K	U	
Ethylbenzene	700	5U	1U	1K	U	
Xylene	10000	5U	1U	1K	U	
Semivolatiles						
None Detected		NS	U	NS	NS	
Metals						
Total Arsenic	50	5U	50U	1U	5U	
Dissolved Arsenic		5U	50U	1.1U	5U	

Notes:
Well drilled and first sampled in August 1992.